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CENTRAL INTELLIGENCE AGENCY  
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THE USSR AND EASTERN EUROPE BELATEDLY  
RECOGNIZE THE CONTAINER REVOLUTION

SHIPS & METHODS CENTER  
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## The USSR and Eastern Europe Belatedly Recognize the Container Revolution

### Summary

1. Although broadly employed in the West since 1966, modern standardized container transport only recently has been introduced in the USSR and Eastern Europe. Advances in industrial technology and trade in countries of the Council for Mutual Economic Assistance (CEMA) have generated a need for a safer, faster transport system to handle a variety of specialized high-cost goods. Accordingly, the CEMA countries have committed themselves to a coordinated policy for the expansion of containerized transportation from its present rudimentary base.

2. Installation of basic rail and port terminal facilities is under way. Additional container ships, railcars, and trucks are provided for in current five-year plans or are on order from Western suppliers. The necessary bureaucratic bodies are being organized and expanded. By 1975 the skeleton of a CEMA network should be formed, with regular service

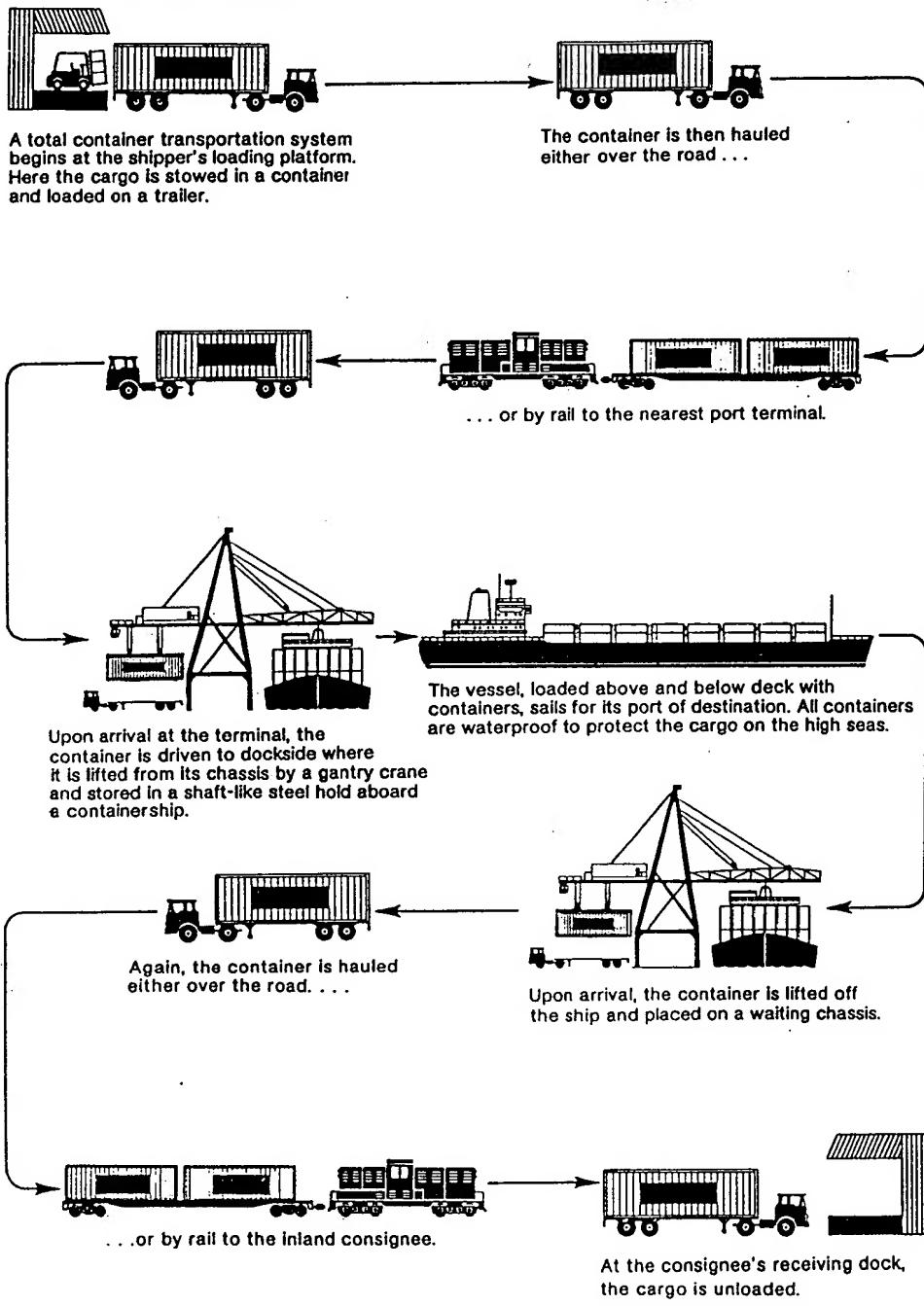
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Figure 1

## Typical Standardized Container Transportation System

Containerization is a system used by all modes of transportation wherein goods are packed and shipped in containers using standard sizes. Standards agreed on by about 50 member countries of the International Standardization Organization (ISO) are shown in the Appendix.



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between 19 CEMA cities and ports from Moscow in the east to Rostock in the west. Containerized service to Japan via the Trans-Siberian Railroad will be systematically built up in this period to provide a Soviet "Land Bridge" as an alternative international freight route. Western suppliers of equipment for container transport systems should find an expanding market in the USSR and Eastern Europe. Sophisticated loading and unloading equipment, systems technology, container leases and purchases, and even some ships and rolling equipment will be on the Communist shopping list for several years at least.

3. The developing CEMA capabilities in containerized transport will effect important economies and speed up the movement of Soviet military supplies. This is true both for the transfer of freight between different railroad gauges at the Soviet borders and for intermodal transfer of supplies destined for military and civilian units in remote areas of the USSR. Furthermore, containerization is essential to the Soviet policy of playing an increasingly important role in international shipping.

Discussion

The Container Revolution

4. As early as 1966, governments and private firms in the industrialized West were aggressively pushing containerization as the means to meet burgeoning transport requirements. Using 10- and 20-foot containers developed by the United States in World War II, maritime shipping companies by 1967 were operating 60 special container ships between the United States and Europe. In the following year, operations were extended to rail, inland water, and highway transportation and the "container revolution" was in full swing. At the start of 1973, Western fleets were operating 580 full-container and 300 partial-container vessels with a combined capacity of more than 343,000 standard 20-foot containers representing a payload of 3 million to 4 million tons.

5. In contrast to these dynamic developments, the USSR and East European countries have lagged in broad implementation of modern container transport technology. This lag is a major illustration of the inability of the CEMA countries to translate known technology expeditiously into successful

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day-to-day operation. Basic economic factors -- such as the growing complexity of industrial output and trade within the CEMA area<sup>1</sup> and the aspirations of the USSR as a major maritime power -- have forced Moscow to take action. Therefore, the USSR is investing substantial domestic resources and is actively seeking technical aid and equipment from developed Western countries to spur its containerization program.

**CEMA and the Communist Effort**

6. CEMA has long been the forum for resolving problems and coordinating actions on the development and operation of the transport systems of the USSR and the East European Communist countries. The USSR has dominated the organization since its inception in 1949. Following the worldwide trend to containerization and the experimentation in various applications by some member countries since 1967, a CEMA-wide program for development of a network of container terminals and transshipment stations was finally adopted at Bucharest in mid-1971.

7. In the CEMA program, member countries are to be linked by 1975 by a network of container-handling ports and terminals integrated with rail

1. This complexity is, of course, a much greater incentive in highly developed Western countries but is nevertheless of concern to the CEMA countries at their current stage of development.

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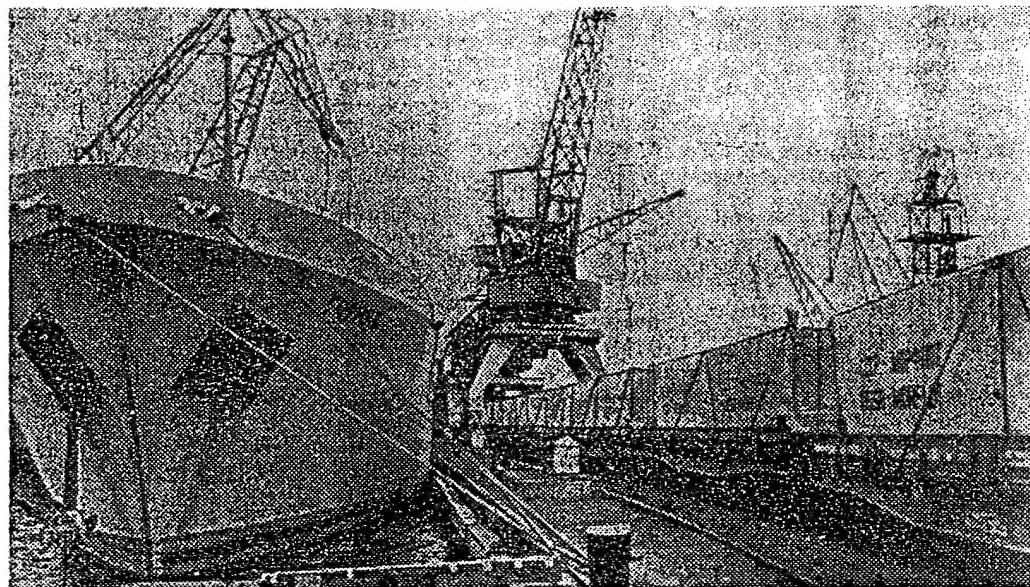
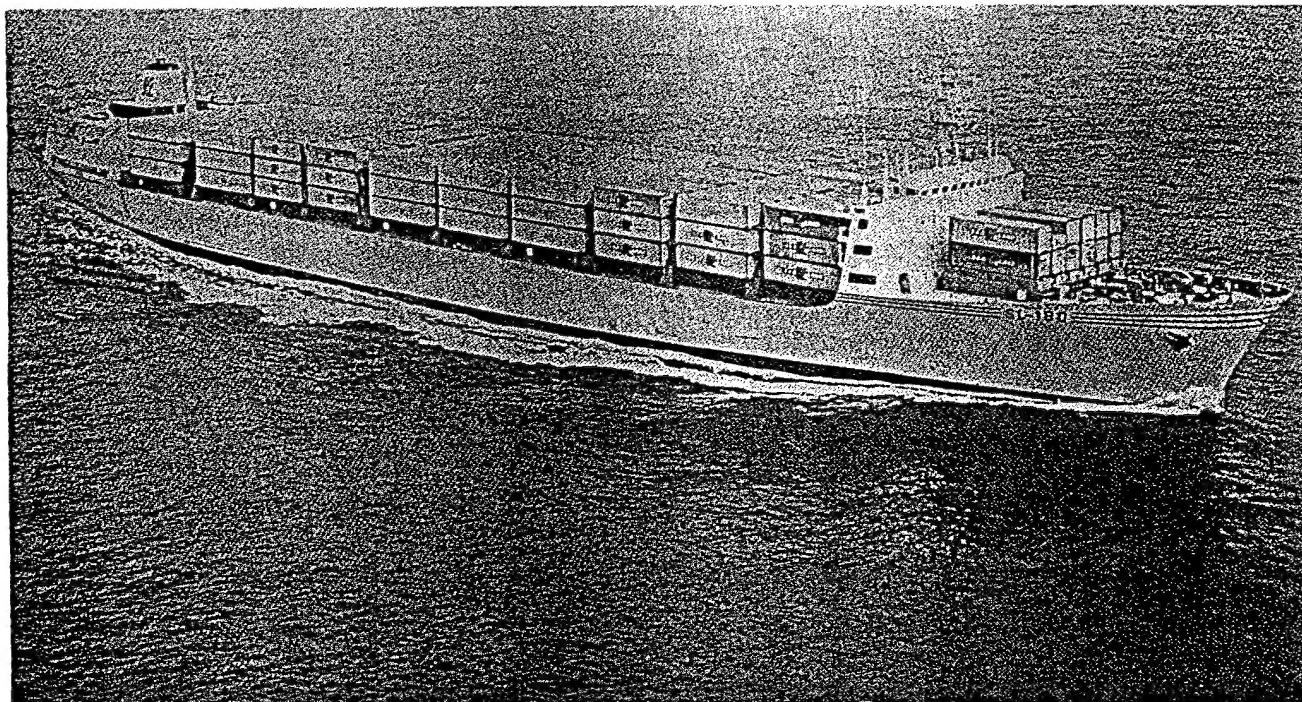


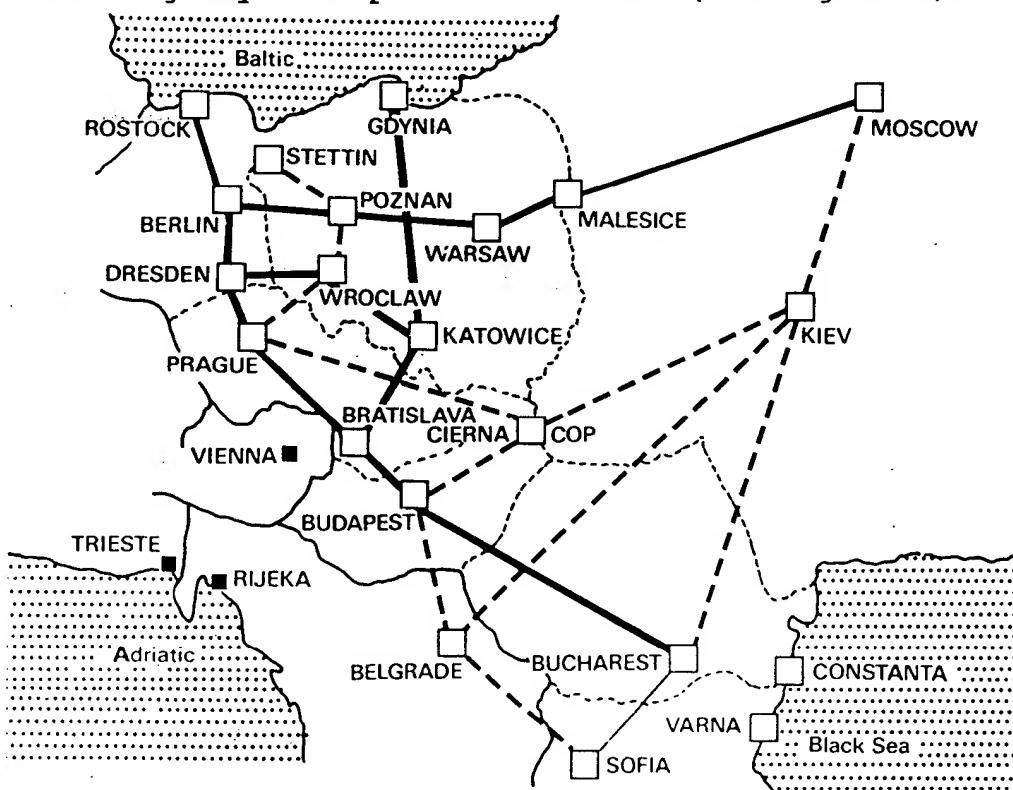
Figure 2. Transloading Large Containers from  
Ships Directly to Rail Cars in Zhdanov Port, USSR



Sea-Land's SL-180 Container Ship

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and highway transport facilities<sup>2</sup> (see Figure 3).



New CEMA container network will link 19 terminals by 1975. Heavy lines indicate routes scheduled for opening on or before 1 January 1974. Broken lines indicate routes to be opened on or before 1 January 1975. Squares show eventual locations of CEMA's major port and rail container terminals.

At the same time, the number of container terminals is to increase to 120 from the 25 available in 1971, with container traffic accounting for about 7% of the 350 million tons of freight scheduled to move

2. Transport facilities in the CEMA countries, especially the railroads, are being gradually upgraded, including changeover to modern diesel or electric traction and the improvement of ancillary facilities to realize the inherent advantages of the new traction.

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internationally within the region. An increase in the inventory of standardized containers to 130,000 from the 7,000 on hand in 1971 is also envisioned. Accordingly, a coordinating council was established to allocate production responsibilities for containers and specialized container-handling equipment among CEMA members.

8. Total investment in the system probably will be more than US \$2 billion, somewhat less than 5% of estimated total public transportation investment during the current Five-Year Plan (1971-75). Among member countries, Soviet investment is to top \$1 billion, followed by Czechoslovakia and Romania with \$280 million and \$200 million, respectively. Data are lacking on the East German, Polish, and Bulgarian shares of this investment package.

9. The CEMA program is small in comparison with the long-run task. The 7% share of traffic targeted for 1975 contrasts with estimates that 70% to 80% of freight moving between CEMA countries is containerizable. As to the planned 1975 container inventory of 130,000, two US container leasing and operating companies alone own more than 110,000 units. Finally, the projected investment expenditures are low, given the highly capital

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intensive nature of containerization programs.

One container ship, for example, costs as much as \$25 million, each container about \$2,500, and port installations and related facilities perhaps \$20 million per berth, including cranes costing more than \$1 million each. The New York - New Jersey Container Terminal at Elizabeth, New Jersey, has invested more than \$143 million alone in seven fully equipped container berths and extensive back-up facilities. As a result, Elizabeth handled nearly 6.5 million tons of containerized cargo in 1971 and nearly 4 million tons in the first six months of 1972 -- more than any other port in the world. The economy of container ship operations, however, as demonstrated in Table 1, more than offsets the large investment.

Table 1

Space Costs for Four Kinds of Ships<sup>1</sup>

	US \$ per Cubic Meter			
	Conventional Ship	Pallet Ship	Container Ship	Barge Ship
Total	6.11	5.38	4.97	4.09
Capital cost	2.30	2.22	2.50	2.48
Operational cost	3.81	3.16	2.47	1.61

1. Source: UNCTAD.

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Developments in the USSR

On the Rail System

10. The USSR has used small cargo containers domestically since 1948. This system was developed to handle small cargo lots over the rail system, and most of the containers are not suitable for maritime or international shipments. Lack of a well-developed road network and enough suitable truck transport in the USSR will continue to limit most movement of large containers to the railroads for some years to come. Inland waterways are closed for two to six months of the year and facilities are inadequately equipped to handle large containers. Many important shippers and consignees are not served by water or by intercity truck transport.

11. There are about 1 million containers in the Soviet inventory, 80% of which are rated 3 tons or less with most of the rest 5 tons. A survey of the Soviet container inventory late in 1971 indicated that 40% were defective.

12. By 1968, containerized shipments in the Soviet Union had reached 28 million tons, mostly by rail. In 1970, Soviet railroads began handling the larger 10- and 20-foot international standard

containers on an experimental basis on a few routes. Organization was tightened in July 1972, when the responsibility for the organization, development, and control of internal container transport by all modes was centralized in the newly created all-union association, Soyuztranskonteyner, an autonomous unit within the Ministry of Railroads. By March 1973, Moscow and nine other cities were served on a regular basis (see Table 2), and attempts were under way to establish international service to Japan (see Figure 4) via the Trans-Siberian Railroad and to Berlin, Prague, Budapest, and Sofia. All-container express trains are to be started in 1973, the first such services to be inaugurated between Moscow and Leningrad, between Moscow and Brest (for through service to Eastern Europe), and along the Trans-Siberian route. By the end of 1972, container traffic accounted for only about 1% (33 million tons) of the total volume of rail traffic, but this amount represented 20% of the total value of rail traffic. Plans call for the Soviet railway system to handle 74 million tons of containerized cargo in 1975. As the volume grows, however, lack of automatic control systems for the movement of containers will

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**Table 2**

**USSR: International Standard  
Container Routes and Stations  
in Regular Service<sup>1</sup>  
March 1973**

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<b>Routes: Moscow to</b>	<b>Stations</b>
Leningrad	Moscow (2 stations)
Riga	Leningrad
Khar'kov	Riga
Tashkent	Khar'kov
Odessa	Tashkent
Berlin	Minsk
Budapest	Odessa
Sofia	Ungeny
Prague	Brest
	Irkutsk
	Khabarovsk
	Nakhodka
	Vladivostok

1. Frequency of service on most routes is only about once a week.

hamper the efficiency of container operations.

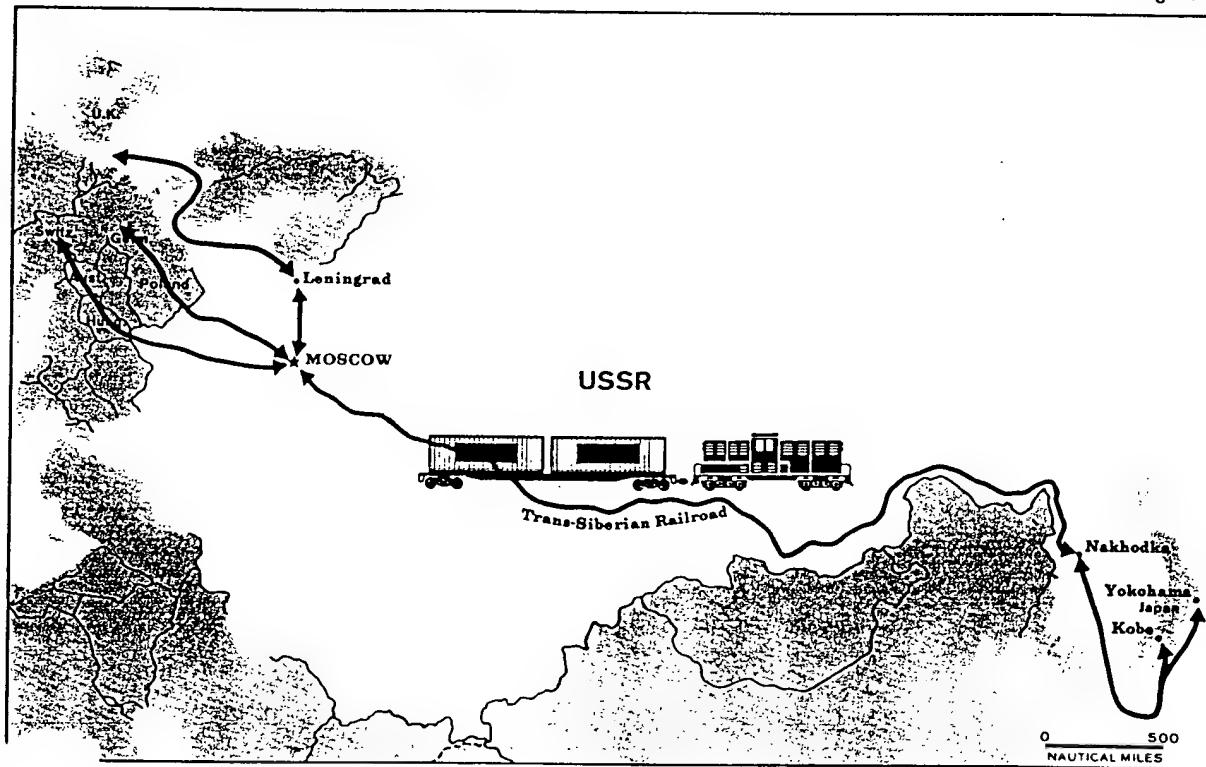
Lack of widespread internal handling facilities will tend to limit the large containers mostly to international railroad transit routes.

Seaborne

13. The first official commitment to Soviet use of modern seaborne containerized transport came in October 1969, when Nikolai Bykov, member of the Collegium of the Ministry of the Maritime Fleet, announced that ships with a capacity of 500 to

**Japan-Europe Container Service**

Figure 4



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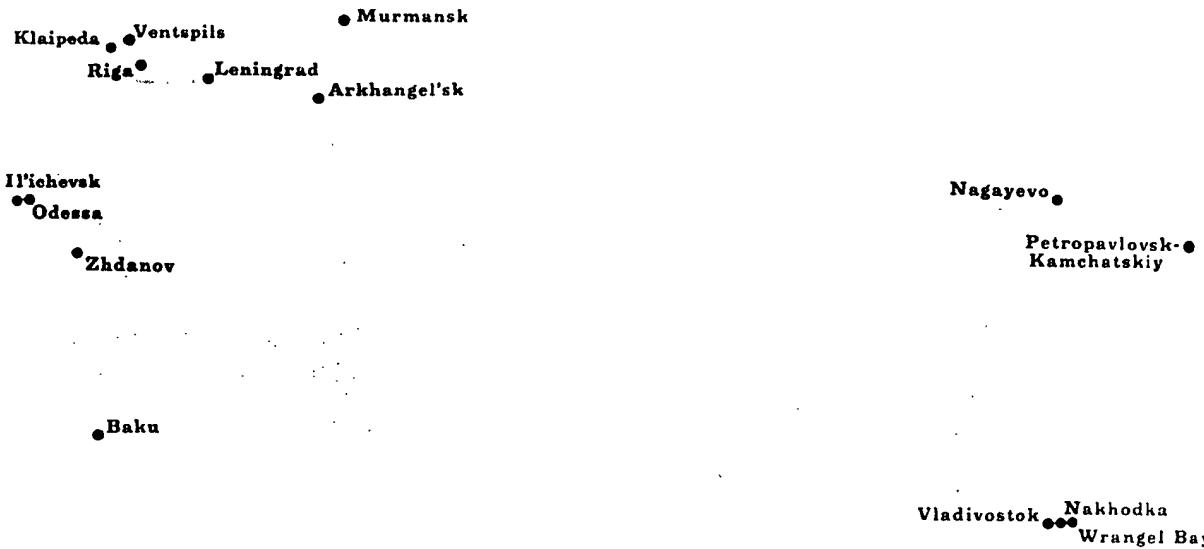
600 containers were to be acquired by the USSR during 1971-75. This commitment was expanded in the 1971-75 Five-Year Plan, which called for (a) seaborne containerized cargo to reach 5 million to 6 million tons by 1975, (b) purchase of at least 20 container ships (mostly 39- to 300-container capacity), (c) construction of modern container port facilities<sup>3</sup> (see Figure 5), and (d) upgrading of the merchant fleet inventory of international standard containers to 23,000 units. The new vessels will be used on major international routes between the USSR and Europe, Cuba, Japan, and the Middle East.

14. When the 1971-75 Five-Year Plan was being drafted, experimental use of international containers was carried out by adapting existing ships, rolling stock, and cargo-handling equipment. By the end of 1970 a few Soviet international shipping

3. Most of the port facilities are new or reconstructed areas at existing ports. One or two berths have been adapted on a temporary basis, with adequate cranes, not specifically designed, however, to handle containers until the new facility is completed. The current volume of container traffic at Soviet ports is small. Leningrad, probably the leading Soviet container port, processed only 600 containers in June 1972 -- indicating an annual rate of 7,200 containers (perhaps about 70,000 tons). The leading non-Communist port, New York, was already handling about 6.5 million tons of containerized cargo in 1971.

Figure 5

## Major Container Ports of the USSR: Status as of 1 January 1973



	Status		Status
<b>Arkhangel'sk</b>	Facilities adapted in 1971 for loading 20-ton containers with small electric loaders. Plans for expansion include 1 quay for containers. Small amounts of additional container handling equipment acquired during 1972.	<b>Wrangel Bay</b>	Container terminal with a capacity of from 120,000 to 140,000 containers a year under construction with Japanese aid. Completion is planned by 1975.
<b>Baku</b>	Agreement in 1972 with Iran for container shipments from Baku to Iranian ports.	<b>Nagayev</b>	Container operations under way and volume expected to increase. 500 large international standard containers arrived at Nakhodka in mid-1972 for Nakhodka-Nagayev service. A specialized container complex planned.
<b>Il'ichevsk</b>	Began regular service in 1971 to Bulgaria on the V. Kucher (container ship). Container section set up in one cargo area (one wharf and warehouse assigned). 20- and 30-ton cranes used. Rear storage area available for 8,000 20-ft. containers. Specialized container terminal to be constructed in the near future. Automatic crane to be installed with productivity of 30 to 40 containers per hour. Extensive warehousing and facilities for motor and rail transfer to be included. A total of only 3,529 containers (53,000 tons) handled during June-December, 1971.	<b>Odessa</b>	Odessa-Varna-Alexandria route in service since 1971. Limited operations at one wharf equipped with 10- to 30-ton portal cranes. Larger container terminal under construction; to be equipped with 40-ton cranes for handling of ships carrying up to 2,000 containers.
<b>Klaipeda</b>	Some containerized cargo being accepted from ships drawing no more than 8.5 meters (capacity up to 300 containers). Depths to be increased to handle ships holding up to 750 containers and a specialized container area is to be constructed.	<b>Petropavlovsk-Kamchatskiy</b>	Refitted container ship Zabaykalsk operating container service to Petropavlovsk from Vladivostok and Nakhodka by late 1971. New facilities for the handling of heavy containers are to be operating before the end of 1975.
<b>Leningrad</b>	Some 20- and 40-foot containers handled on conventional cargo ships Leningrad-Europe beginning May 1970. Regular handling of containers began in 1971 with use of adapted timber carrier Ivan Chernykh, Leningrad-London. Container-handling cranes ordered from Finland to equip 2 berths at the new terminal probably to be delivered about August 1973. Port in mid-1972 was processing 600 containers per month; processed 4,888 large containers in 1971.	<b>Riga</b>	One wharf adapted and the first container ship Fritsis Gaylis assigned to the Riga-Liverpool route in summer 1971. Container route Riga-Rostock also initiated in 1971. Plans to program loading up to 30-ton containers using Minsk-32 computer. Larger container terminal under construction.
<b>Murmansk</b>	Container terminal under construction	<b>Ventspils</b>	Port equipment adapted for some container handling. Experimentation and expansion under way. Containers shipped to England on Fritsis Gaylis.
<b>Nakhodka</b>	One berth operating since May 1971, transloading up to 100 containers per day. Second container berth being fitted out is expected to handle more than 500,000 tons (perhaps 42,000 containers) annually.	<b>Vladivostok</b>	Container terminal under construction. A large consignment of specialized equipment for handling containers has been delivered. One 30-ton crane installed and two others to be installed soon at the container pier. First container ship departed in July 1972.
		<b>Zhdanov</b>	20-ft. containers being handled on the route to Italy

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lines were carrying small amounts of containerized cargo on converted cargo ships. Some of the containers were small Soviet railway containers of 5 tons or less, whereas others were 20- and 40-foot containers leased from foreign shippers and conforming to international standards. These larger units were carried on the decks of conventional cargo ships on international routes moving between Il'ichevsk and Egypt, Black Sea ports and Bulgaria, Baltic ports and the United Kingdom and East Germany, and Far Eastern ports and Japan.

15. The first Soviet-flag full container ships -- two small East German-built Boltenhagen-class vessels (39 containers) -- were delivered in June 1971. The lead ship of the first class of full container ships to be built in the USSR -- Sestroretsk (218 containers) -- was delivered to the Soviet Baltic Steamship Co. in March 1972. The Soviet merchant fleet now has at least four ships of the Sestroretsk class and perhaps five of the Boltenhagen class.<sup>4</sup> In addition, at least 12 dry cargo ships have been converted to handle containers. Other ships of the Sestroretsk and Boltenhagen classes will be delivered by 1975 along

<sup>4</sup>. Later versions carry 56 containers and are sometimes referred to as Warin-class.

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with new classes, including as many as 15 ships with a capacity of more than 700 containers. In addition, a total of 74 partial-container ships are to be delivered by East European shipyards by 1975, along with two large roll-on, roll-off (RO-RO) ships from Finland, with a capacity of 1,300 containers and six smaller RO-RO ships from France. The RO-RO ships with their built-in unloading system are uniquely suited for operations to ports in less developed countries where there is insufficient sophisticated shore-based gear to handle large unitized cargo. Table 3 gives data on container ships on order by the USSR.

16. Soviet international container lines, including those serving the Soviet Land Bridge, currently operate out of Baltic, Black Sea, and Far Eastern ports. Services that have now operated for more than a year include Leningrad-London, Riga-Liverpool, Il'ichevsk (near Odessa) - Varna, and Nakhodka-Japan. Services recently introduced include Leningrad-Hamburg-Rotterdam, Riga - Le Havre, Il'ichevsk-Alexandria, Zhdanov (Black Sea Basin) - Italy, and Nakhodka - Hong Kong. Services were established recently between the Black Sea and Canada and between the Soviet Far East and the

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Table 3

**USSR: Container Ships on Order  
as of March 1973**

<b>Country of Construction</b>	<b>Class or Type of Ship</b>	<b>Remarks</b>
East Germany	Mercur (13,314 deadweight tons - DWT)	Full-container ship with 774-container capacity. As many as 15 to be delivered by 1975.
East Germany	Mercator (12,050 DWT)	Partial-container ship, 368-container capacity. Fifteen to be delivered by 1975.
Romania	"Universal" type (2,150 DWT)	Probably a multi-purpose dry cargo with partial-container capacity. Twenty-four ships to be delivered by 1975.
Finland <sup>1</sup>	Roll-on, roll-off type (21,000 DWT)	1,300-container capacity. Total order for five, with two to be delivered by 1975. Ships are to be strengthened for ice navigation and a 30-ton axle load on the deck.
France	Roll-on, roll-off type (4,200 DWT)	Six to be delivered during 1974-75.
USSR	Aleksandr Fadeyev (5,000 DWT)	300-container capacity. Speed of 17 knots, range up to 10,000 miles. At least five are to be built at Kherson with the first to be delivered early in 1973.
USSR	Berezan (12,000 DWT)	Partial-container ship with 300-container capacity; eight ordered, with some probably delivered by 1975.
Poland	"B-46" (7,500 DWT)	Partial-container ship. Speed 17 knots. Thirty-five to be delivered during 1973-75.

1. Except for the two large roll-on, roll-off vessels to be delivered by Finland, container ships of more than 800-container capacity are not expected until after 1975.

west coast of the United States. At present all these routes are operated solely by the Soviet merchant fleet, but the Varna service eventually will be worked in conjunction with the Bulgarian Merchant Fleet, and Japanese shipowners are pressing to enter the Nakhodka-Japan service.

The Soviet Land Bridge

17. The Soviet Land Bridge is a key element in the Soviet development of an intermodal international containerized transport system. This unique trade route between Japan and Europe was established in 1967 by Soviet, Japanese, and European transportation companies and freight forwarders and soon came into use for experimental shipments of small lots of international containers between Japan and Europe. Conventional dry cargo ships were modified to carry containers between Japan and Nakhodka, where at least one wharf has been designated to give priority to the transfer of containers to railroad cars for transit of the USSR via the Trans-Siberian Railroad. Some of the containers from Japan<sup>5</sup> are delivered to Europe via sea from Lenigrad, by truck from Moscow, or via rail or truck

5. Service was expanded in May 1972 to include a Hong Kong - Nakhodka link. Some containers have since been delivered [footnote continued on p. 16]

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from the western borders of the USSR. Transit times are reported to be from 24 to 45 days, roughly on a par with all-sea movement. Rates are as much as 20% lower than all-sea routing.<sup>6</sup>

18. Traffic via the Soviet Land Bridge has been light but increasing. Currently less than 300,000 tons a year, traffic may jump with the installation of new facilities. These facilities include a new port under construction at Wrangel Bay near Nakhodka with a planned 1975 capacity of 120,000 to 140,000 containers (perhaps 1.5 million tons) per year.<sup>7</sup> Improved coordination and regular operation of all-container express trains carrying up to 100 standard 20-foot containers per trip may reduce the total transit time between Japan and Europe to perhaps 20-25 days. The successful development of the Soviet Land Bridge depends on

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from West Germany to Hong Kong in as little as 24 days via the Soviet Land Bridge route, comparing favorably with an all-sea voyage of 23 to 30 days.

6. The USSR may revise the tariff, boosting rates 4% to 5% for Japan-to-Europe traffic and reducing rates 7% to 10% on Europe-to-Japan traffic in an attempt to rectify the imbalance in container loads. Only 300 to 500 containers a month are moving from Japan. Some US shippers are considering use of the light Europe-to-Japan direction on the Trans-Siberian route for movement of empty containers to reload in Japan.

7. Planned 1975 capacity at Wrangel Bay is roughly comparable with the 1971 volume of 150,000 containers handled at Bremen/Bremerhaven in West Germany.

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whether the new generation of large, fast container ships already being assigned to the Europe - Far East runs will capture this traffic first. Some container ships already make the trip in 23-30 days, and shippers may be reluctant or find it impractical to switch routes. Volume via the Land Bridge route now amounts to only about 1% of the seaborne volume.

19. Competition for Japan-Europe traffic may also develop from the embryonic North American Land Bridge. In spite of first-class facilities, this land bridge has not yet been able to attract any substantial volume because of problems with intermodal cooperation, government regulation, and uncompetitive rates. The Seatrain Company of the United States has finally engineered a breakthrough by concluding agreements with several railroad companies in 1972 that permit the initiation of through North American Land Bridge service between Japan and Europe or intermediate points in the United States. Rates are the same as all-water routes, and delivery times are as much as six or seven days less. A transit time of 21 days from Tokyo to Rotterdam already has been demonstrated. New 33-knot container ships due in service

in 1973 could further reduce time in transit by perhaps another five days. The superior service plus good freight-forwarding connections are likely to attract substantial traffic to the North American Land Bridge -- perhaps partly at the expense of the Soviet Land Bridge service. Certainly the North American facilities are far more developed and capable of greater volume than those of the USSR.

Assistance from the Developed West

20. The USSR is actively seeking technical aid and equipment from the developed Western countries to expedite the establishment and expansion of containerized transport systems. A compilation of requirements described by the maritime fleet, rail, and river ministries shows that the minimum total demand through 1975 will be 32,000 10- and 20-foot containers. None of these containers, or the equipment capable of handling them, is yet produced in appreciable quantities by the USSR.

21. Moscow has made overtures since at least 1970 for the purchase of containers and handling equipment from the West. A huge container exposition, billed as "Container-72," was held at Leningrad in 1972. Containers as well as all types of vehicles and handling equipment for all modes of

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transport were on display. Manufacturers from all over the world, including the United States, were invited to participate. The largest contracts signed at the exhibition were reportedly with firms in East Germany, Bulgaria, Finland, and the United Kingdom. After the Leningrad exposition, the Soviets also arranged two large contracts to lease containers from Western firms. Container Transport International (CTI), a wholly-owned subsidiary of the Leasco Corp. of the United States, signed a contract with Sovfracht in October 1972 to lease 1,500 containers to the Soviets, and Sea-Containers, a US-registered international container-leasing company, contracted in January 1973 to supply the USSR with 1,000 20-foot UK-built containers. More of these contracts may be expected because the USSR probably will not reach its annual domestic production target of 16,000 containers for several years.

Developments in East European Countries

22. East Germany has led the East European countries in the introduction and operation of container transport services. Elsewhere in Eastern Europe, the establishment of containerized transport is only beginning. More rapid development can

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be expected over the next few years with the coordinated expansion of a CEMA network.

East Germany

23. Containerized transport has been under intensive development in East Germany since 1968. In June of that year, the first container trains were put into regularly scheduled operations between Rostock, Berlin, and Dresden and in November a container ship service to the British port of Tilbury (near London) was started.

24. Rail container services in East Germany have increased from 21 trains a week in 1968-69 to more than 340 in 1971-72. About 18 container terminals in East Germany now serve about 1,600 towns and more than 700 enterprises. By 1975, 45 terminals are to be in operation. Regular international rail service to Czechoslovakia was established in September 1971, and trial runs have been made to Poland, Bulgaria, Hungary, and the USSR.

25. Seaborne container traffic is small because container facilities at Rostock will not be completed until 1974. Services are currently open to Tilbury, with Hamburg and Riga as ports of call. In 1971, Rostock handled 10,000 to 15,000 containers; a volume of 60,000 to 70,000 is expected by 1975.

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As part of the Rostock complex, an additional terminal capable of handling 100,000 containers by 1975 is under construction.

26. Total containerized traffic in East Germany has mushroomed since 1968. In 1969, a year after service was started, 23,000 containers carried some 160,000 tons. Two years later, service had expanded to 175,000 containers equal to 1.3 million tons -- still less than 1% of overall transport volume. All of this growth has occurred in land or seaborne trade; container service by air is not available, and none is planned until after 1975.

27. East Germany's container inventory should also show large increases by 1975. In 1968, 6,000 containers -- all less than 5 tons -- were available; by 1971, 12,000 were in the inventory. One-half of these were the newer international standard containers of the 10- and 20-foot variety. By 1975, the total inventory is expected to increase to 40,000 units, nearly all of which will be the larger international standard containers.

Hungary

28. Hungarian experience with containerized transportation dates back to 1967, when the Hungarian State Railway (MAV) became the first CEMA

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member to join the International Container Transportation Co. This firm is a commercial agent for the national railroads of 21 European countries and is involved in marketing international container services. Since 1967, however, Hungary's use of containers has not grown rapidly. Current services consist of rail shipments to Hamburg and Bremerhaven under the auspices of the Hungarian General Shipping Enterprise (MASPED).

29. Hungarian plans call for a gradual expansion in the network of container centers and services. By 1985, about 3%-4% of all rail freight is to be containerized, almost all of it on international trunk lines. Planned minimum container requirements and traffic levels compared with those in 1970 follow:

	Volume of Containerized Shipments (Thousand Tons)	Container Requirements (20-foot Units)	Rail Loadings (Number of Containers)
1970	200	300	10,000
1975	700	1,000	50,000
1980	2,000	2,600	150,000

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30. Twelve rail terminals throughout the country also are being developed, three of which are at Budapest, Hungary's principal container center.<sup>8</sup> Meanwhile, Hungary is negotiating to extend the present Rostock-Dresden-Prague all-container train service between East Germany and Czechoslovakia to Budapest, and is participating with the USSR and Czechoslovakia in construction of a container transloading center in the Chop-Zahony border complex.

31. Hungary's production of international standard containers has moved ahead rapidly, and some have been exported to Western Europe. About 2,000 containers -- mostly of the 20-foot variety -- were produced during 1971, and production is expected to increase to 8,000 to 12,000 by 1975. The Hungarians are also gearing up for production of special heavy cranes for handling containers and special flat cars. Hungarian shipyards have begun to build multi-purpose ships of 3,000 DWT suitable for carrying up to 100 20-foot containers, and

8. In addition to the three at Budapest, other terminals are being developed at Miskolc, Gyor, Debrecen, Pecs, Szeged, Szombathely, Nagykoros, Nyiregyhaza, and Sopron.

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construction of full-container ships lies just over the horizon.

Poland

32. Poland, like most East European countries, is in the early stages of developing a container transport system. Containerized rail service has been limited to experimental runs on the Berlin-Warsaw-Moscow route since 1970, with regular service to begin sometime in 1973. Seaborne trade started in 1969 when service to the United States was inaugurated using dry cargo ships adapted to carry several containers on deck. This service was followed shortly by adoption of a route to the United Kingdom. Inadequate rail and highway clearances and rudimentary facilities at the port of Gdynia have served to restrict the volume of this trade. Also, the limited road clearances throughout Poland have kept inland movement of containers to a minimum.

33. Rapid expansion of Poland's small containerized service may be expected during the next few years. Most of the emphasis will be placed on rail and seaborne trade. By 1975 an initial build-up to 1 million tons of containerized freight is

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forecast.<sup>9</sup> The expansion is to accelerate after 1975 -- 20 million tons forecast by the planners for 1980 and 70 million for 1985.

34. The Polish railroad system, which will handle most of the planned increases in tonnage, is charged with implementing plans for the national containerized transport system. Initial once-a-week service began between a few stations in January 1973. By 1975 there are to be seven rail container stations in Poland -- at least five of which (Poznan, Warsaw, Sosnowiec, Katowice, and Gdynia) are either completed or will be by the end of 1973, when they will be served by direct container trains. The railroad system already has imported 160 international standard containers from East Germany to get service under way. Poland and the USSR also are constructing container trans-loading facilities along their border. Because Poland stands between East Germany and the USSR and is establishing ocean container terminals at Gdynia and Swinoujscie, its future role as a transit area for East European container trade is most promising.

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9. Each of at least eight non-Communist ports already handle more than twice the volume expected in Poland by 1975.

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35. Expansion of Polish seaborne container trade rests primarily on the development of the port facilities at Gdynia. One wharf was remodeled for containers in 1971-72, and a new container complex is under construction in early 1973. Capacity for container traffic at Gdynia at the beginning of 1972 was about 350,000 tons a year, with the 1975 level expected to increase to about 1.3 million tons a year. Only 6,500 containers with about 56,700 tons of cargo actually were shipped through Gdynia in 1972.

36. Poland has already built a few small partial-container ships for export and is to deliver several with 700-container capacity to Polish Ocean Lines (PLO) during 1973-75. PLO received 60 large containers from East Germany in 1972 and began pick-up service to some locations in PLO-owned trucks. Domestic production of international standard containers began in 1972, and about 3,500 are planned for 1975. Most of these will be the larger 20-foot models. Also, a few railroad cars and special trucks for handling the 20-foot containers are being produced and tested domestically.

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Czechoslovakia

37. Containerized transportation in Czechoslovakia is in its infancy, lagging behind even other Communist countries. Current services include a regularly scheduled twice-a-week rail route to Rostock, East Germany, and river transport to Hamburg for transshipment overseas. Freight moved in container services is a negligible share of total tonnage.

38. Czechoslovakia has scheduled a step-by-step introduction of containerized services that is to proceed at an accelerated pace after 1975. A special Department of Containerization was established in the Federal Ministry of Transportation to foster the development of containerized transportation. Total investment is expected to grow from \$280 million by 1975 to nearly \$2 billion by 1980, with annual volume expanding from 2 million tons in 1975 to 8 million in 1980. Five major rail terminals are planned for completion by 1978 with another 20 expected to be completed later. Moreover, the Czech inventory of containers is expected to grow rapidly from 50 in 1971 to 10,000 by 1975, most of which will be produced domestically. The

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Czechs also are participating in the joint development of the Chop/Zahony container transloading complex on the Soviet border.

Romania

39. Much of Romania's experience with containerized transport is in the planning stages with some experimental services and construction of facilities just beginning. Current services are limited to a few all-container trains operating on five main lines and carrying 10-foot containers. Use of 20-foot containers reportedly started in 1972.

40. By 1975, Romania plans to invest \$200 million to establish a standard container transport system. A basic network of rail services, radiating from Bucharest and integrated with highway facilities, is planned. Five rail terminals are currently under construction at Bucharest, Brasov, Sibiu, Arad, and Timisoara, and containerized services are planned to Constanta, Timisoara, and Iasi. Timisoara is near the border with Hungary and Yugoslavia, and Iasi is near the Soviet border. Both are key transfer points for any integrated CEMA-wide container system. Except for improving the container handling capability of Constanta, the

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current plan makes no mention of seaborne containerized shipping, most of the emphasis being on inland developments.

Bulgaria

41. Containerized transportation in Bulgaria is little more than a dream in the planner's eye. Bulgaria's only current involvement with containers began in 1971 when the port of Varna began handling small shipments from a Soviet container ship carrying 20-foot containers on a regular Varna-Il'ichevsk route.

42. Future plans include port expansion at Varna, establishment of 12 rail stations equipped to handle large containers, and domestic manufacture of small container ships, standard containers, specialized rail cars, and trucks. By 1975, Bulgaria plans to haul more than 7 million tons of freight in 10-, 20-, and 30-foot containers and to manufacture 6,000 containers.

Military Advantages to CEMA

43. A growing proportion of modern military freight traffic is handled more expeditiously and safely in its own special containers. In some respects, military traffic has been at the forefront of the worldwide container revolution. In

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the instance of the USSR and Eastern Europe, the expansion of fixed facilities, rolling stock, and bureaucratic bodies necessary for containerization of freight traffic is part of a steady improvement in the military transportation network in the CEMA area. Of great value from the military point of view is the potential speed-up in east-west movement of military supplies. Containerization is particularly important for the reduction of transit time across the change-of-gauge rail points at the Soviet border. Finally, containerized international transport enhances the ability to support military or economic activity in the Far East or other remote areas of the USSR.

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**APPENDIX**

External Dimensions and Maximum  
Gross Weights of Containers  
Agreed on by the International  
Standardization Organization

<u>Container Designation</u>	<u>Length</u>	<u>Width<sup>1</sup></u>	<u>Height</u>	<u>Maximum Gross Weight (Tons<sup>2</sup>)</u>
1A	40' 0"	8' 0"	8' 0" <sup>3</sup>	30.0
1B	29'11 $\frac{1}{4}$ "	8' 0"	8' 0"	25.0
1C	19'10 $\frac{1}{2}$ "	8' 0"	8' 0"	20.0
1D	9' 9 $\frac{3}{4}$ "	8' 0"	8' 0"	10.0
1E	6' 5 $\frac{1}{2}$ "	8' 0"	8' 0"	7.0
1F	4' 9 $\frac{1}{2}$ "	8' 0"	8' 0"	5.0
2A	9' 7"	7' 6 $\frac{1}{2}$ "	6'10 $\frac{1}{2}$ "	7.0
2B	7'10 $\frac{1}{2}$ "	6'10 $\frac{1}{2}$ "	6'10 $\frac{1}{2}$ "	7.0
2C	4' 9"	7' 6 $\frac{1}{2}$ "	6'10 $\frac{1}{2}$ "	7.0
3A	6'10 $\frac{1}{2}$ "	8' 8"	7'10 $\frac{1}{2}$ "	5.0
3B	6'10 $\frac{1}{2}$ "	4' 4"	7'10 $\frac{1}{2}$ "	5.0
3C	6'10 $\frac{1}{2}$ "	4' 4"	7'10 $\frac{1}{2}$ "	2.5

1. Certain European countries would like a standard container width of 2.5 meters (8 feet 2 $\frac{1}{2}$  inches) to be adopted, primarily because the standard width of road vehicles on the continent of Europe is 2.5 meters. In certain other countries, including the United States, it is 2.44 meters (8 feet), and such containers would be effectively excluded.

2. One ton equals 2,240 pounds. Net loads of these containers vary widely according to the commodities carried. Containers rated at a maximum gross weight of 20 tons, for example, usually average a load of about 8 to 12 tons for a large volume of mixed freight.

3. Forty-foot containers with a height of 8 feet 6 inches have also been approved.